POTPOURRI

Department of Environmental Quality
Office of the Secretary

Risk/Cost/Benefit Statement
Toxic Air Pollutant Ambient Air Standards, Log #AQ281
(LAC 33:III.5112) (0709Pot1)

Introduction

The Louisiana Department of Environmental Quality is proposing to revise ambient air standards (AAS), reclassify several toxic air pollutants (TAPs), and add a short term AAS for many Class I TAPs in LAC 33:III.5112, Tables 51.1 and 51.2 (AQ281). The Toxic Air Pollutant Emission Control Program is authorized under R.S. 30:2060. This rule addresses the requirement at LAC 33:III.5109.B.5 to periodically review and update the ambient air standards for each TAP in LAC 33:III.5112, Table 51.2.

This document has been prepared to satisfy the requirements of R.S. 30:2019(D) and R.S. 49.953(G) (Acts 600 and 642 of the 1995 Louisiana Legislature, respectively). However, this document is not a quantitative analysis of cost, risk, or economic benefit, although potential costs are identified to the extent practical. A potpourri was published in the April 20, 2007, issue of the *Louisiana Register* with an advanced notice of this proposed rulemaking and a request for comments on the estimated cost to implement this regulation as written. The department received comment that the cost would be in excess of $1,000,000 and a cost/benefit analysis would be required; however no additional specific cost data was provided by commenters. The statutes allow a qualitative analysis of economic and environmental benefit where a more quantitative analysis is not practical.

Therefore, the qualitative approach is taken with this analysis. Retaining methyl ethyl ketone as a toxic air pollutant, raising the AAS for 6 toxic air pollutants, and reclassifying 7 toxic air pollutants will not increase costs to industry. Introducing a short term standard for Class I toxic air pollutants may result in some increased cost, which cannot be determined. The department believes that establishing more stringent standards for 15 AAS is likely to impose the most significant cost to the regulated industry. As discussed below, all the revisions to the air toxics regulation provide environmental benefits by protecting Louisiana citizens from health related exposures to toxic air pollutants. The dollar benefits of this avoided environmental risk cannot be determined. In addition, the department maintains that the direct environmental benefits to be derived from this rule will, in the judgment of reasonable persons, outweigh any costs associated with the implementation of the rule and that the rule is the most cost-effective alternative to achieve these benefits.

Risks Addressed by the Rule

According to the Louisiana Environmental Quality Act, the purpose of the Louisiana Air Control Law is ". . . to promote an environment free from pollution that jeopardizes the health and welfare of the citizens of the state . . ." (R.S. 30:2052). Therefore, the department asserts that all Louisiana toxic air pollutant ambient air standards (AAS) should represent concentration levels of toxic air pollutants that are insufficient to cause damaging effects to humans when exposed to such levels over the appropriate length of time. For many toxic air pollutants, the department employs the use of occupational exposure guidelines and values that have been adjusted to account for continuous exposure versus an 8- or 10-hour period and for sensitive populations, such as women and children, versus male workers. The environmental agencies in several states do likewise.

In light of the discussion above, a child exposed for a continuous 8-hour period or longer to any n-butyl alcohol concentration below the current regulatory value of 3620 $\mu g/m^3$, as listed in LAC 33:III.5112, Table 51.2, should experience no adverse health effects. However, a review of occupational exposure limits for n-butyl alcohol now indicates that the current value of 3620 $\mu g/m^3$ should be replaced with a value of 1452 $\mu g/m^3$, which is 60.1% more stringent (see table below). In other words, if this standard is not revised, then citizens of Louisiana that become exposed to concentrations of n-butyl

alcohol less than 3620 µg/m^3, but greater than 1452 µg/m^3, may experience adverse health effects, although the facility responsible for the concentration above 1452 µg/m^3 will probably still be in compliance. For n-butyl alcohol, these adverse health effects include hypoactivity and ataxia.

The table below represents the toxic air pollutants whose health effects review, similar to the example given above for n-butyl alcohol, has indicated that a revision to a lower level is due and the percentage decrease of the AAS.

Proposed 8-Hour Average Standard Changes	
Compound	**% Decrease of Current AAS**
n-Butyl alcohol	59.9%
Hydrochloric acid	60.6%
1,4-Dioxane	95.0%
Hydrofluoric acid	84.2%
Hydrogen cyanide	53.8%
Maleic anhydride	60.0%
Mercury	80.0%
Methyl methacrylate	50.0%
Propionaldehyde	73.4%
Pyridine	80.6%
Sulfuric acid	80.0%
Vinyl acetate	46.3%
Proposed Annual Average Standard Changes	
Compound	**% Decrease of Current AAS**
Acetaldehyde	80.2%
1,2-Dibromoethane	62.2%
Epichlorohydrin	98.8%

From the table above, there are 15 toxic air pollutants whose AAS is proposed to be set at a more stringent level based upon the review of occupational health standards or the EPA's integrated risk information system (IRIS).

Environmental and Health Benefits of the Rule

The benefit of this proposed regulatory action is that no Louisiana citizen will experience adverse health effects from exposure to any of the toxic air pollutants listed in LAC 33:III.5112, Table 51.2, and that the revised AAS will fulfill the purpose of the Louisiana Air Control Law.

Economic Costs

The department estimates that approximately 110 Louisiana facilities have the potential to emit any one of these toxic air pollutants and may be required to install additional controls as a result of the more stringent AAS. The upper limit of the number of controls to be installed would be no larger than 1650 (110 X 15) instances of new control equipment or new ductwork installed on an already existing control. For the cost estimate, the assumption is that 1/3 of the facilities will require new control equipment and 2/3 can route these emissions to existing control equipment by installing new ductwork. Equipment costs shown below are estimated with the assistance of the EPA Air Pollution Cost Control Manual, January 2002, http://www.epa.gov/ttn/catc/dir1/ c_allchs.pdf. These costs are not facility-specific and may only provide an order of magnitude.

Control Equipment Type	**Estimated Average Total Capital Cost[1]**	**Estimated Average Annual Operating Cost[1]**
Carbon absorption	$300,000	$80,000
Condenser	$80,000	No estimate—some costs recouped
Incinerator	$500,000 - $1,200,000	$300,000 - $400,000
Wet scrubber	$80,000	$275,000
Electrostatic	$2,000,000	$550,000

precipitator (ESP)		
Install new ductwork	$20,000	Negligible

[1] Cost in 1993 dollars

The equation below assumes that 2/3 of the facilities install new ductwork to direct emissions to an existing control.

2/3 X 1650 X $20,000 = $22,000,000
(estimated cost for installing new ductwork to existing control devices)

Assume the remaining 1/3 facilities chose control equipment types uniformly; that is, equal numbers chose carbon absorption units, condensers, incinerators, wet scrubbers, or ESPs. The number of facilities choosing each control equipment option would be 1/3 X 1/5 X 1650. For example:

1/3 X 1/5 X 1650 X $300,000 = $33,000,000
(estimated cost for installation of carbon absorbers)

Control Equipment Type	**Estimated Total Capital Cost**	**Estimated Annual Operating Cost per Facility**
Install new ductwork	$22,000,000	Negligible
Carbon absorbers	$33,000,000	$80,000
Condensers	$8,800,000	No estimate—some costs recouped
Incinerators	$55,000,000 - $132,000,000	$300,000 - $400,000
Wet scrubbers	$8,800,000	$275,000
ESPs	$220,000,000	$550,000

For all facilities combined, the estimated total capital cost ranges from $347,600,000 to $424,600,000, with estimated annual operating expenses of $132,550,000 to $143,550,000 (110 X (80,000 + (300,000 to 400,000) + 275,000 + 550,000).

The department conducted screening modeling which indicates that only 28 facilities or 34 facility-AAS combinations (since some facilities failed the department's screening modeling for more than one pollutant) may be required to install additional controls to meet the revised standards for any one toxic air pollutant. Previously it was determined that 1650 represented the maximum number of Louisiana facility-AAS combinations. The screening modeling eliminates all of the 1650 except for 34. Therefore, 34/1650 X the range of capital cost, or $7,162,667 to $8,749,333, and 34/1650 X the range of annual operating cost, or $2,731,333 to $2,958,000, provides an estimate of the total cost for compliance with the revised standards. Converting to present day dollars, the range of capital costs becomes $9,993,036 to $12,206,682 and the range of operating costs becomes $3,810,635 to $4,126,870.

The facilities that cannot meet the revised AAS at their property line may still be granted a waiver from control requirements if they can demonstrate that: (1) compliance with the standards would be economically infeasible; (2) residual emissions would not cause significant harm to the environment or public health; and (3) the facility's emissions are controlled to a level that meets the Maximum Achievable Control Technology.

Conclusion

The department believes that the benefits of enhanced environmental and public health protection outweigh the costs of the rule. Therefore, the rule is the most cost-effective alternative to achieve these benefits.